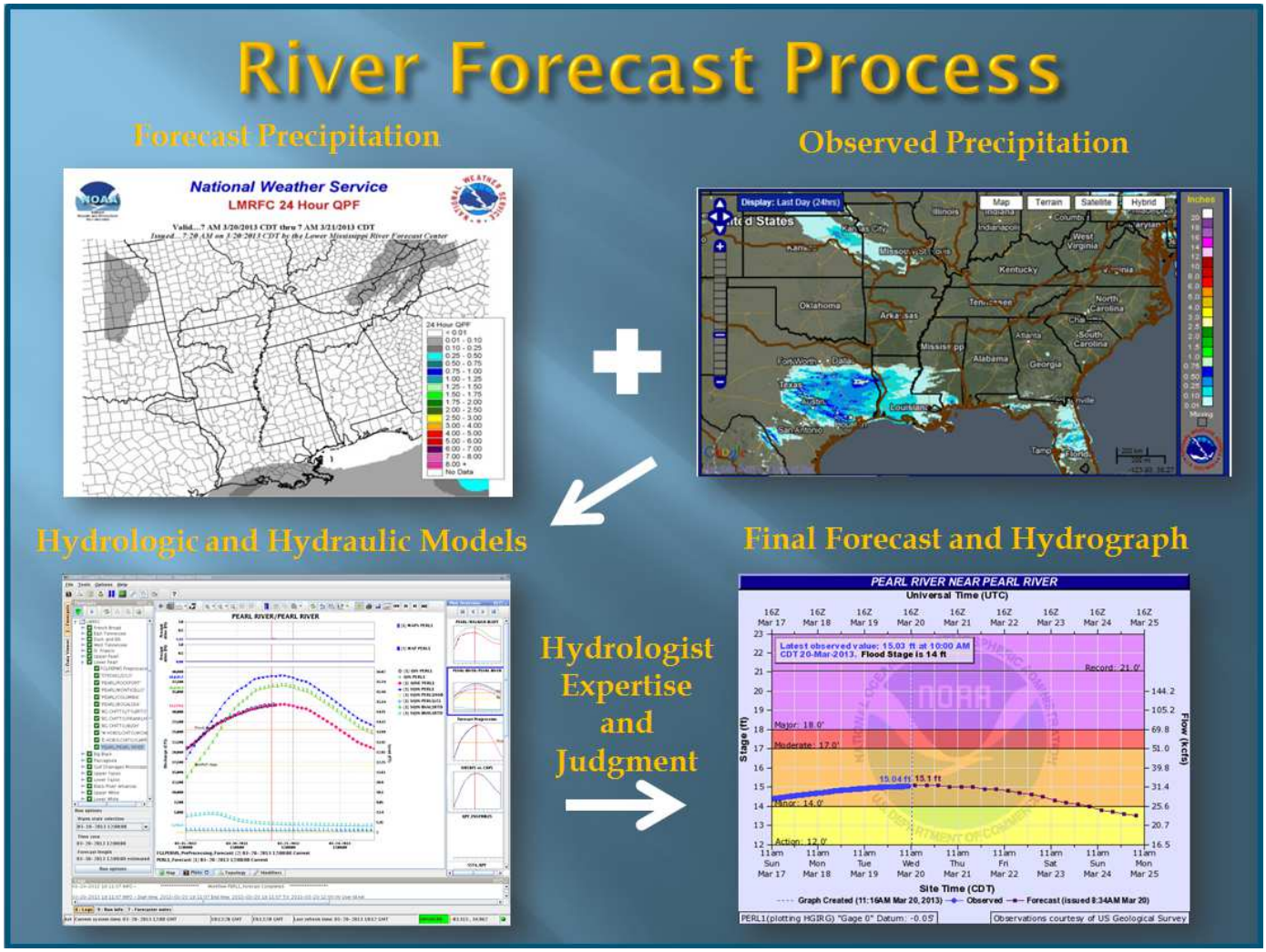
October Monthly Educational Module

"The Lower Mississippi River Forecast Center's Forecast Process"

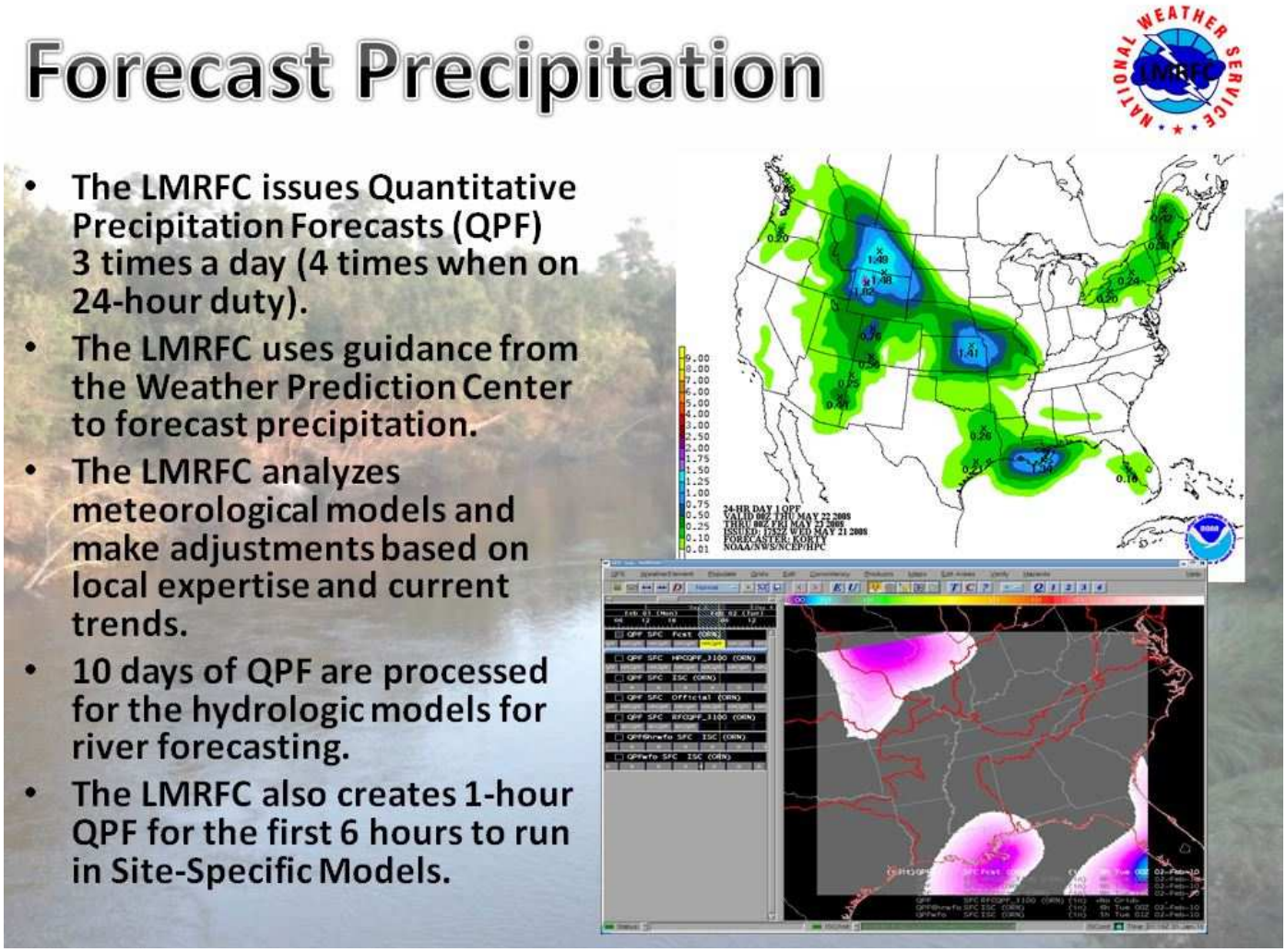
Day 1

This is the LMRFC's 9th Monthly Module, and this month we are dedicating our module to our forecast process. Now, back in the August module, we highlighted one of the most frequently asked questions that we get, "How do forecast the rivers?" This month you will find out what all goes into those river forecasts that help save lives and property. To start, we are giving you a quick overview of the forecast process. Check out the graphic below to see!



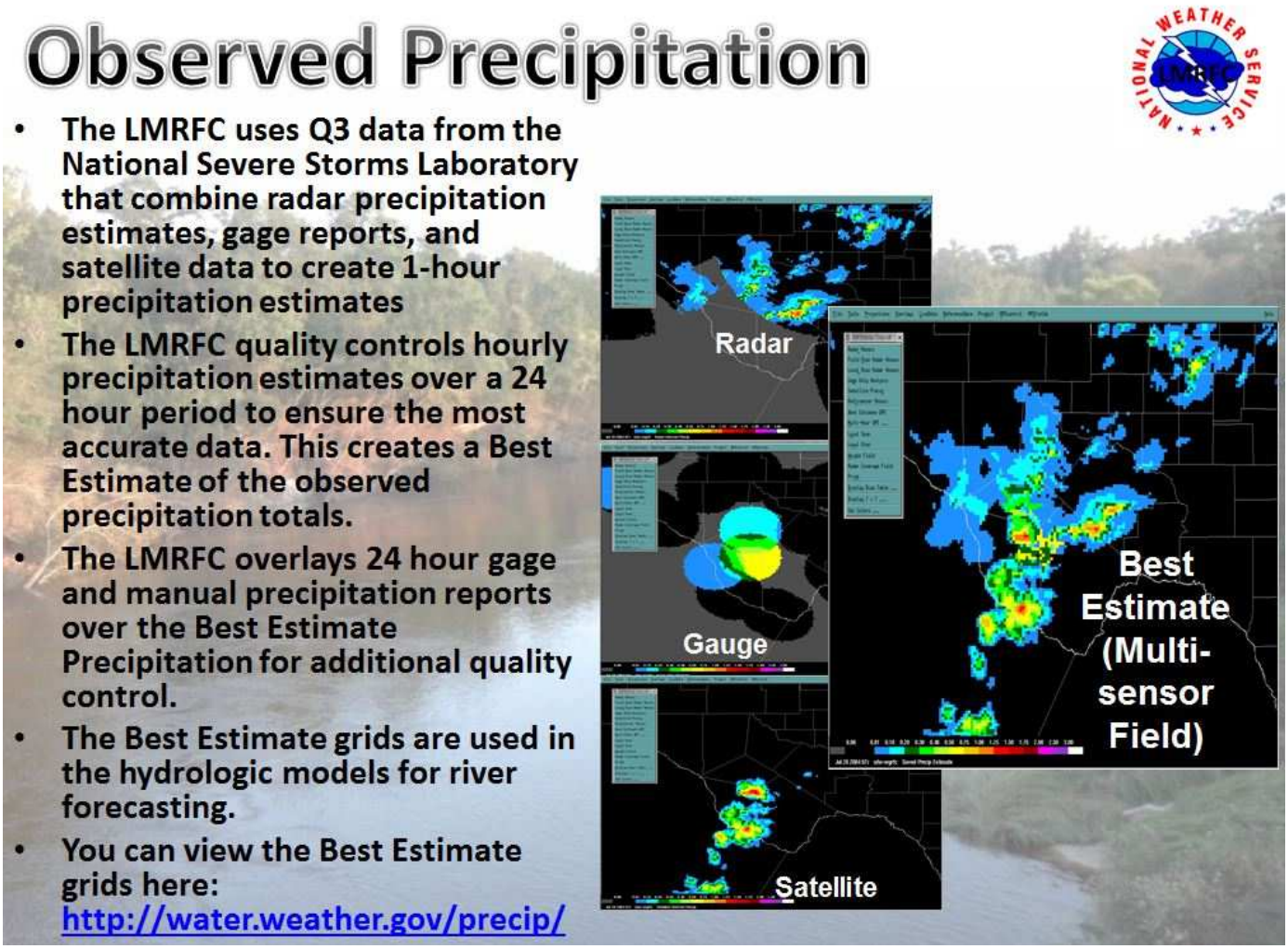
Day 2

To kick off the LMRFC's forecasting process, we are talking about how the LMRFC forecasts precipitation. Check out the graphic below to learn more about this process.



Day 3

To continue the theme of precipitation, this module post discusses the LMRFC's process for creating the observed precipitation estimates. Check out the graphic here to learn more about how observed precipitation estimates are derived.

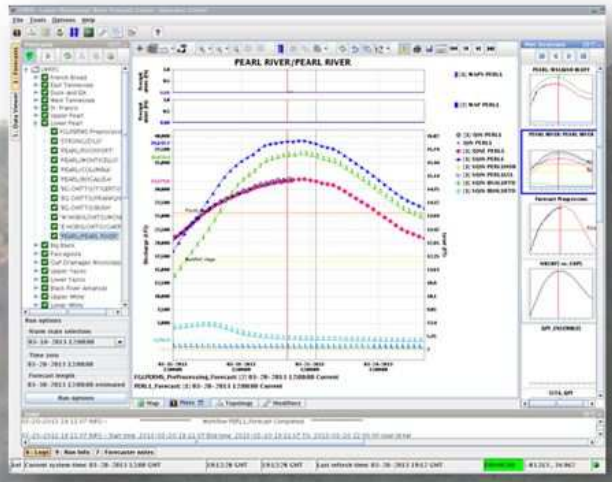


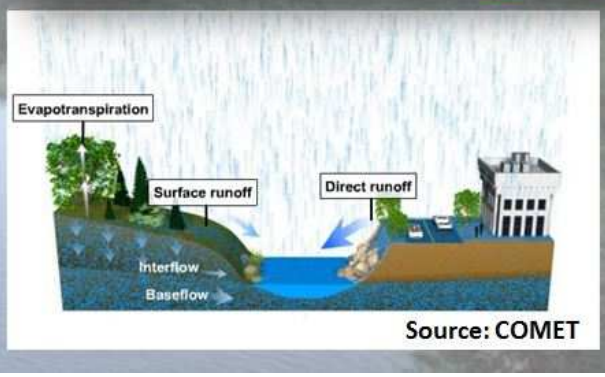
Day 4

Over the past couple of posts, we have talked about the LMRFC's process for creating forecast precipitation and observed precipitation estimates. Now it is time to talk about forecasting rivers with these precipitation datasets. Check out the graphic below to learn more about the river forecasting process.

Forecast Rivers

- Precipitation estimates and forecasts are merged into a continuous dataset and are ingested into the hydrologic models.
- Hydrologic conceptual models are used to simulate physical processes on the soil column (pictured bottom right).
- Forecasters adjust model parameters in real time using an interactive program called the Community Hydrologic Prediction System (CHPS) (pictured top right).
- River forecasts are issued on daily basis based on 12Z observations and include 12 or 24 hours of forecasted rainfall.
- Forecast updates are issued in the evening or when needed during significant events





Day 5

Previously, we covered how the LMRFC forecasts rivers in its area. Today, we are going to dive a little deeper into the LMRFC river forecasting process. During our NWS "Did You Know Week," we mentioned that the LMRFC has 220 daily forecast points. That's a lot of forecasts! So, how does the LMRFC get all of these forecasts out in a timely manner? Well, check out the graphic below to find out!

River Basin Desks

- Because the LMRFC issues 220 daily forecast points over a 220,000 sq. ft. area, the LMRFC area is broken into 5 different desks in order to get all of the river forecasts issued in a timely and accurate manner.
- The desks are broken up as follows:

- **Desk 1**: MS River
- **Desk 2**: MS & LA Rivers
- **Desk 3**: NC, VA, AL, TN Rivers
- **Desk 4**: MO, AR, LA Rivers
- **Desk 5**: LA & TX Rivers

Day 6

Now that you know the LMRFC breaks up its geographical area to get all 220 daily forecasts issued, it's time to cover those specific areas a little more in detail. To start, we are covering the area that the LMRFC calls "Desk 1," and that is the Mississippi River Basin! To learn more about the MS River basin and its forecast process, check out the graphic below.

Desk 1: Mississippi River

- Desk 1 is comprised of the following rivers and tributaries:
  - Arkansas River Basin
  - Atchafalaya River Basin
  - Ohio River Basin
  - Mississippi River Basin
- Forecasting on this desk is a little different. The forecast process goes like this.
- In the morning, the MS River forecaster waits for flows from upstream offices, then he or she runs the hydrologic and hydraulic models.
- Then, the forecaster will coordinate the Cairo forecast with the USACE and issue the 5-day forecast for all 20 locations on the MS River.
- In the afternoon, the MS River forecaster will issue the Zero QPF forecast (no precipitation forecast is included).
- On Wednesdays, the forecaster will issue the Long-Range Forecast which goes out 28 days.

- You can access the forecasts here:
  - MS River: http://www.srh.noaa.gov/lmrfc/?n=lowerohio,lowermississippi,andlowerarkansasrivers
  - Atchafalaya River: http://www.srh.noaa.gov/lmrfc/?n=atchafalayariverbasin

Day 7

In the previous post, we talked all about “Desk 1” in the LMRFC’s forecast process. Now, it’s time to learn more about Desk 2! Check out the graphic below to learn more.

Desk 2: MS and LA Rivers

- Desk 2 is comprised of the following rivers and tributaries:
- Yazoo River Basin
  - Tallahatchie River
  - Yalobusha River
  - Yazoo River
- Pearl River Basin
  - Yockanookany River
  - Bogue Chitto River
  - Pearl River
- Pascagoula River Basin
  - Chickasawhay River
  - Leaf River
  - Pascagoula River
- Big Black River Basin
  - Big Black River
  - Homochitto River
- Gulf Drainages Basin
  - Wolf River
  - Biloxi River
  - Jourdan River

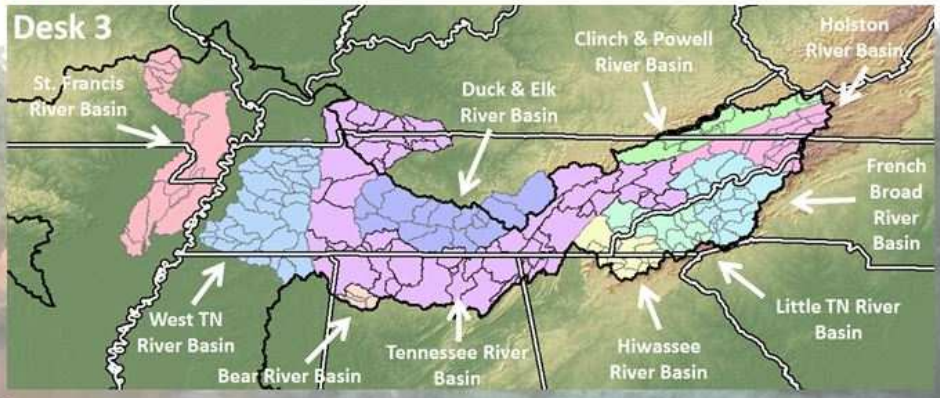
- You can access the forecasts here:
  - Yazoo River: http://www.srh.noaa.gov/lmrfc/?n=yazooriverbasin
  - Pearl River: http://www.srh.noaa.gov/lmrfc/?n=pearlriverbasin
  - Pascagoula River and Gulf Drainages: http://www.srh.noaa.gov/lmrfc/?n=pascagoulariverandgulfdrainagebasins
  - Big Black River: http://www.srh.noaa.gov/lmrfc/?n=bigblackandhomochittoriverbasins

Day 8

We are continuing our discussion about the LMRFC's forecast process with Desk 3 in the LMRFC's forecast process! Check out the graphic to find out more about the rivers on Desk 3.

Desk 3: TN, NC, VA, GA, AL Rivers

- Desk 3 is comprised of the following rivers and tributaries:
- French Broad River Basin
  - French Broad River
  - Pigeon River
- Holston River
- Little TN River Basin
  - Little TN River
  - Tuckasegee River
- Hiwassee River
- Clinch & Powell Rivers
- Bear Creek
  - Monitored by Huntsville WFO
- Duck & Elk Rivers
- West TN River Basin
  - Obion River
  - Hatchie River
  - Wolf River
- St. Francis River
- Tennessee River Basin
  - Forecasted by TVA



- You can access the forecasts here:
  - French Broad/Little TN River Basins: http://www.srh.noaa.gov/lmrfc/?n=frenchbroadandwestncriverbasins
  - Clinch/Powell/East TN River Basin: http://www.srh.noaa.gov/lmrfc/?n=easttenn_swvirginiariverbasins
  - Duck/Elk/Central TN River Basin: http://www.srh.noaa.gov/lmrfc/?n=centraltennesseeandnorthalabamariverbasins
  - West TN River Basin: http://www.srh.noaa.gov/lmrfc/?n=westtennesseeriverbasins
  - St. Francis River: http://www.srh.noaa.gov/lmrfc/?n=st.francisriverbasin

Day 9

We hope you are enjoying learning about the different desks in the LMRFC's forecast process. Check out the graphic below to learn more about Desk 4!

Desk 4: AR, MO, and LA Rivers

- Desk 4 is comprised of the following rivers and tributaries:
- Black River Basin
  - Jacks Fork River
  - Current River
  - Spring River
  - Black River
- White River Basin
  - Buffalo River
  - Cache River
  - White River
- Ouachita River Basin
  - Saline River
  - Bayou D'Arbonne
  - Boeuf River
  - Tensas River
  - Ouachita River

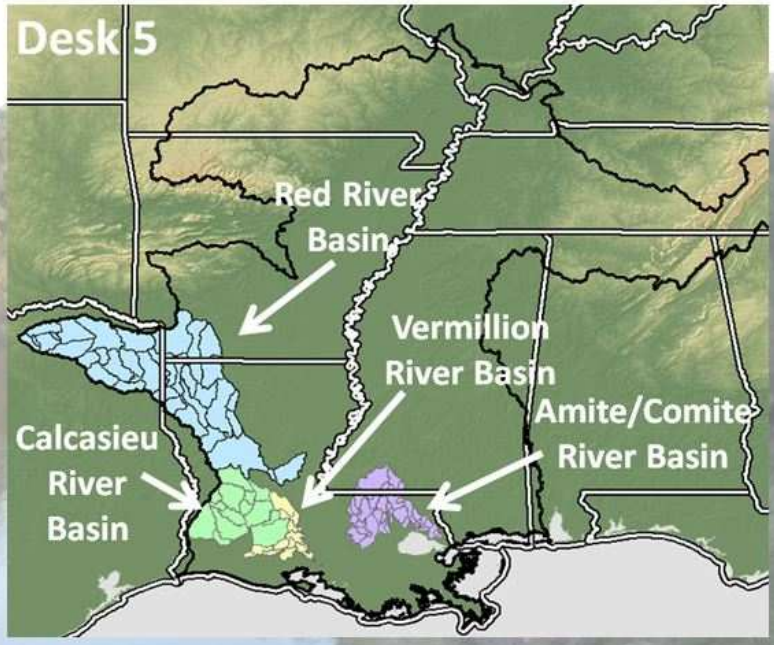
- You can access the forecasts here:
  - Black River: http://www.srh.noaa.gov/lmrfc/?n=blackriverbasin
  - White River: http://www.srh.noaa.gov/lmrfc/?n=whiteriverbasin
  - Upper Ouachita River: http://www.srh.noaa.gov/lmrfc/?n=upperouachitariverbasin
  - Lower Ouachita River: http://www.srh.noaa.gov/lmrfc/?n=lowerouachitariverbasin

Day 10

It's time to cover our last desk in the LMRFC's forecast process. To learn more about Desk 5, check out the graphic below.

Desk 5: TX and LA Rivers

- Desk 5 is comprised of the following rivers and tributaries:
- Red River Basin
  - Red River
  - Sulphur River
  - Bayou Dorcheat
- Calcasieu River Basin
  - Calcasieu River
  - Mermentau river
- Vermillion River Basin
- Amite/Comite River Basin
  - Amite River
  - Comite River
  - Tangipahoa River
  - Tickfaw River
  - Tchefuncta River
  - Bogue Falaya River



- You can access the forecasts for these river basins here:
  - Red River Basin: http://www.srh.noaa.gov/lmrfc/?n=redriverbasin
  - Calcasieu River Basin: http://www.srh.noaa.gov/lmrfc/?n=calcasieu_swla.riverbasins
  - Amite/Comite River Basin: http://www.srh.noaa.gov/lmrfc/?n=amite/comiteriversandlakepontchartrainbasins

Day 11

Now that we have covered the LMRFC's forecast process, it's time to talk about the river forecasts and forecasting considerations. Check out the graphic below to learn more.

River Forecasts & Considerations

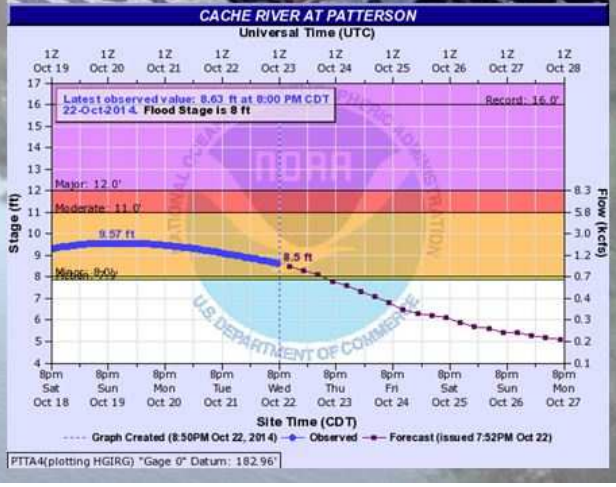
- The 5-day river forecasts are issued on daily basis based on 12Z observations and include 12 or 24 hours of forecasted rainfall.
- The forecasts are issued as text products and hydrographs (pictured right).
- Forecast updates are issued in the evening or when needed during significant events.
- When a forecaster issues a river forecast, he or she considers the following:
  - Ground State
    - How wet or dry is it?
  - Past Model Performances
  - Rainfall
    - Gage-based and Radar-based
  - Rainfall Variability
    - Distribution over the basin
    - Rainfall Intensity

Day 12

Our last topic of this month's module is all about contingency forecasts! Check out the graphic below to learn more about these guidance forecasts.

Contingency Forecasts

- Contingency forecasts are river forecasts issued for Weather Forecast Offices for guidance and planning purposes.
- Contingency forecasts are generated with future rainfall beyond the 12 or 24 hours used in the morning forecast.
- The future rainfall is processed by Weather Forecast Offices, Weather Prediction Center, or different weather models. The future rainfall is, then, ingested into the hydrologic model for forecasting purposes.
- These guidance forecasts help local forecasters and partners plan and prepare for possible river flooding.



We hope you have enjoyed learning all about the LMRFC's forecast process, and we hope you will stick around for what's in store next month!